

Name: _____

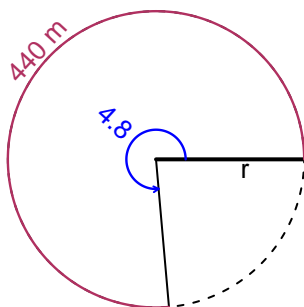
Date: _____

Trig Final (TEST v684)

- You can use a calculator (like [Desmos](#))
- You should have a unit-circle with special angles and coordinates marked.

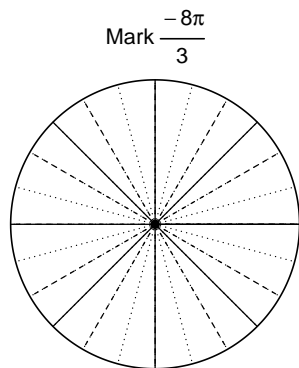
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 4.8 radians. The arc length is 440 meters. How long is the radius in meters?

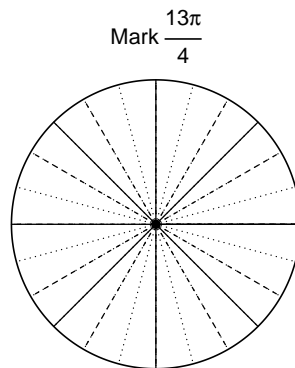


Question 2

Consider angles $-\frac{8\pi}{3}$ and $\frac{13\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(-\frac{8\pi}{3}\right)$ and $\sin\left(\frac{13\pi}{4}\right)$ by using a unit circle (provided separately).



Find $\cos(-8\pi/3)$



Find $\sin(13\pi/4)$

Question 3

If $\cos(\theta) = \frac{-28}{53}$, and θ is in quadrant III, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with a frequency of 6.1 Hz, a midline at $y = -2.61$ meters, and an amplitude of 4.69 meters. At $t = 0$, the mass is at the midline and moving up. Write an equation to model the height (y in meters) as a function of time (t in seconds).